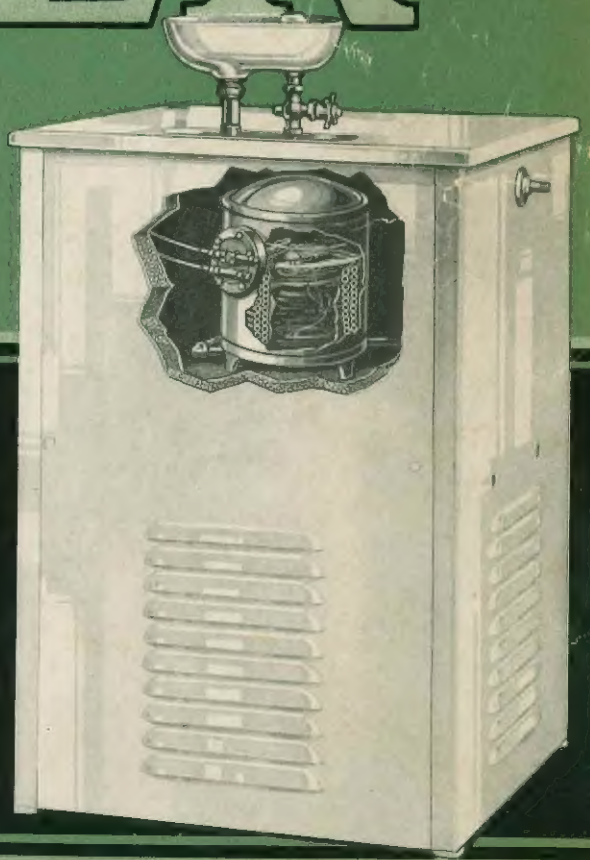
Bilt-Rite

Instantaneous

T-5 Box

WATER COOLER



Now For the First Time Instantaneous Electric Water Cooling

For **Frigidaire** Applications

Design Division

The Russ

Bilt-Rite

Electric Instantaneous

WATER COOLER

Catalog No. A-F 27

Department of Liquid Cooling

filed Apr. 28, 1927
date of pub. - Apr. 7, 1927 (after copyright registration)
Actual © date Apr 7, 1927

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1927
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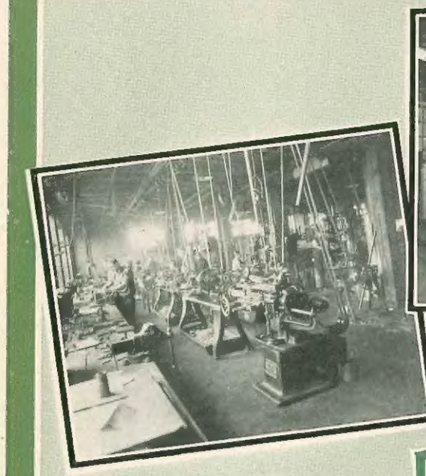
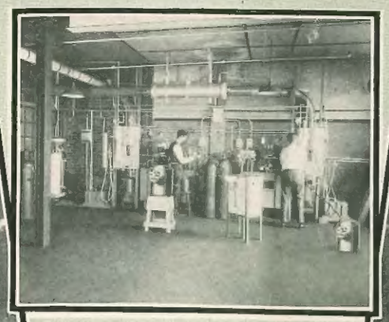
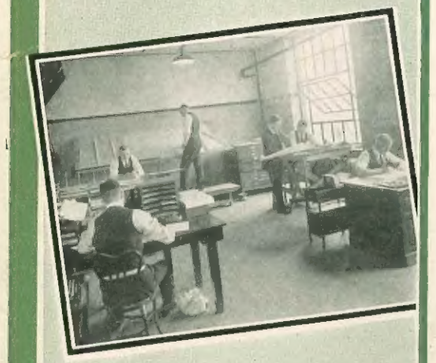
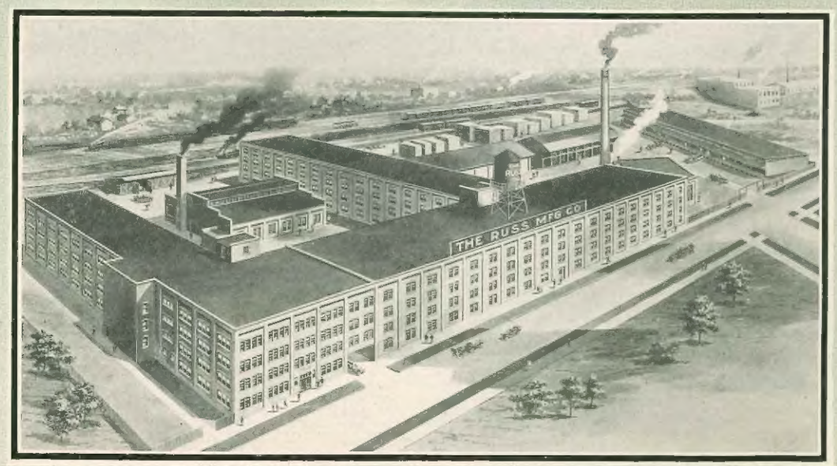






Back of the
Bilt-Rite
Instantaneous
WATER COOLER
is a Modern Progressive Plant and an Organization Fully Equipped That has been Operating over a Long Period of Years



FOREWORD

The health and efficiency of every individual is dependent upon the purity and temperature of drinking water. If water is lacking in these qualities, the individual does not drink enough. Water that is too warm is distasteful, and water that is too cold is disagreeable and unhealthful.

Wherever groups of factory or office employees are involved, the employer necessarily must be interested in this very important question. Beyond this, wherever drinking water is provided in public buildings, schools, restaurants, hotels, etc., those responsible for the supplying of this need are also deeply concerned.

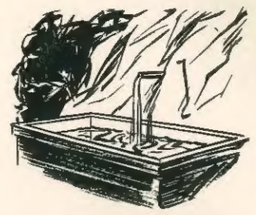
Methods employed up to this time have not provided the means for a continuous supply of fresh water at correct drinking temperature. In the Bilt-Rite Instantaneous Electric Water Cooler we present a revolutionary idea in water cooling, which affords a supply of ideal drinking water. By comparison with prevailing methods the cooling is instantaneous, affording a continuous supply of fresh water; the control is automatic and positive, assuring correct predetermined temperature. Initial and operating costs are appreciably reduced. Space is conserved.

The Bilt-Rite Water Cooler is remarkable because of its adaptability to all types of water cooling applications, whether for drinking purposes or commercial uses.

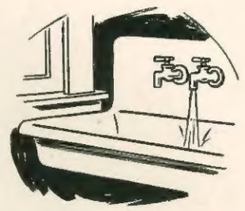
THE RUSS MANUFACTURING COMPANY

The Historical Development of Water Cooling

FROM the beginning of time man has been dependent upon water for life. The very essence of existence lies in the water supply and the character and nature of the water available for drinking purposes. Wherever there was an abundance of water, there civilization flourished; wherever it was lacking, there civilization and eventually life itself vanished. It is an established fact that the amount of water available to man in any given section is one of the best indices of the development of that section.



World history is spotted with accounts of the efforts of man to supply himself, his family and his community with pure, cool drinking water in abundant quantities. There are still to be found remains in many parts of the old world of the wonderful and interesting aqueducts built by the Romans, and history gives many interesting accounts of the development of the water supplies of London, Paris and other cities of more recent origin.



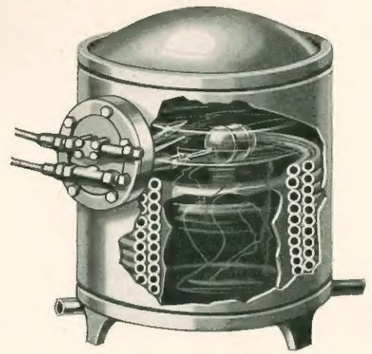
In ancient times, man sought the deep well, the cool spring, or the mountain stream, and constructed such receptacles as the skin sack and the porous earthern jar for carrying and keeping water cool.

As the supply of available water increased and was brought to the home, the factory, and other places of public assembly, it has been cooled in many and various ways familiar to all of us — such as the running faucet, a piece of ice in a pail or pitcher, and an ice-packed cooler.

With the development of civilization and the gathering of people into large centers — cities, towns and villages — the problem was to supply pure water in abundance. Today, however, good pure water is to be had in most places and the problem changes to the finding of the best and most economical method of proper cooling to correct drinking temperature.

Science and engineering skill have replaced the haphazard and inefficient methods of cooling water with modern, efficient, iceless refrigeration and the highest degree of attainment in this field is the Bilt-Rite Instantaneous Electric Water Cooler.

Operation of the Bilt-Rite Instantaneous Electric Water Cooler



Patent Pending

Fig. 1

THE Bilt-Rite Instantaneous Electric Water Cooling Unit (Fig. 1) *replaces* the low side or evaporator of the common flooded type refrigeration system. In the Bilt-Rite system of water cooling, the water to be cooled passes thru a coil which is completely immersed in the liquid refrigerant. The water, in passing thru the coil, adds heat to the SO_2 causing it to boil. *One pound of boiling SO_2 has approximately the same cooling effect as one pound of melting ice.* The evaporation of the SO_2 directly on the water coil makes possible a *direct heat transfer* that heretofore has been impossible to obtain with electric water cooling equipment.

Compare the Bilt-Rite Instantaneous Water Cooling System with the very common Instantaneous Water Heating System. The latter is a result of the realization by heating engineers of the obvious advantage of placing the water coil containing the water to be heated in direct contact with the heating medium. Today no one would consider a Water Heating System involving an intervening water bath as a heat transfer medium. Obviously such a system is *neither instantaneous nor efficient.*

The Bilt-Rite Water Cooling System, covered by the Kellogg patents, embodies essentially the same idea except that the direction of heat transfer is reversed. The coil, containing the water to be *cooled* instead of heated, is placed in direct contact with the *cooling* instead of the heating medium. The *direct heat transfer* thus obtained makes possible *instantaneous cooling* rather than instantaneous heating. No ice formation or intervening water bath is required with this system. It is indeed simple in operation and obviously efficient.

The refrigeration cycle of the Bilt-Rite Water Cooling System is very similar to that of the ordinary flooded type system.

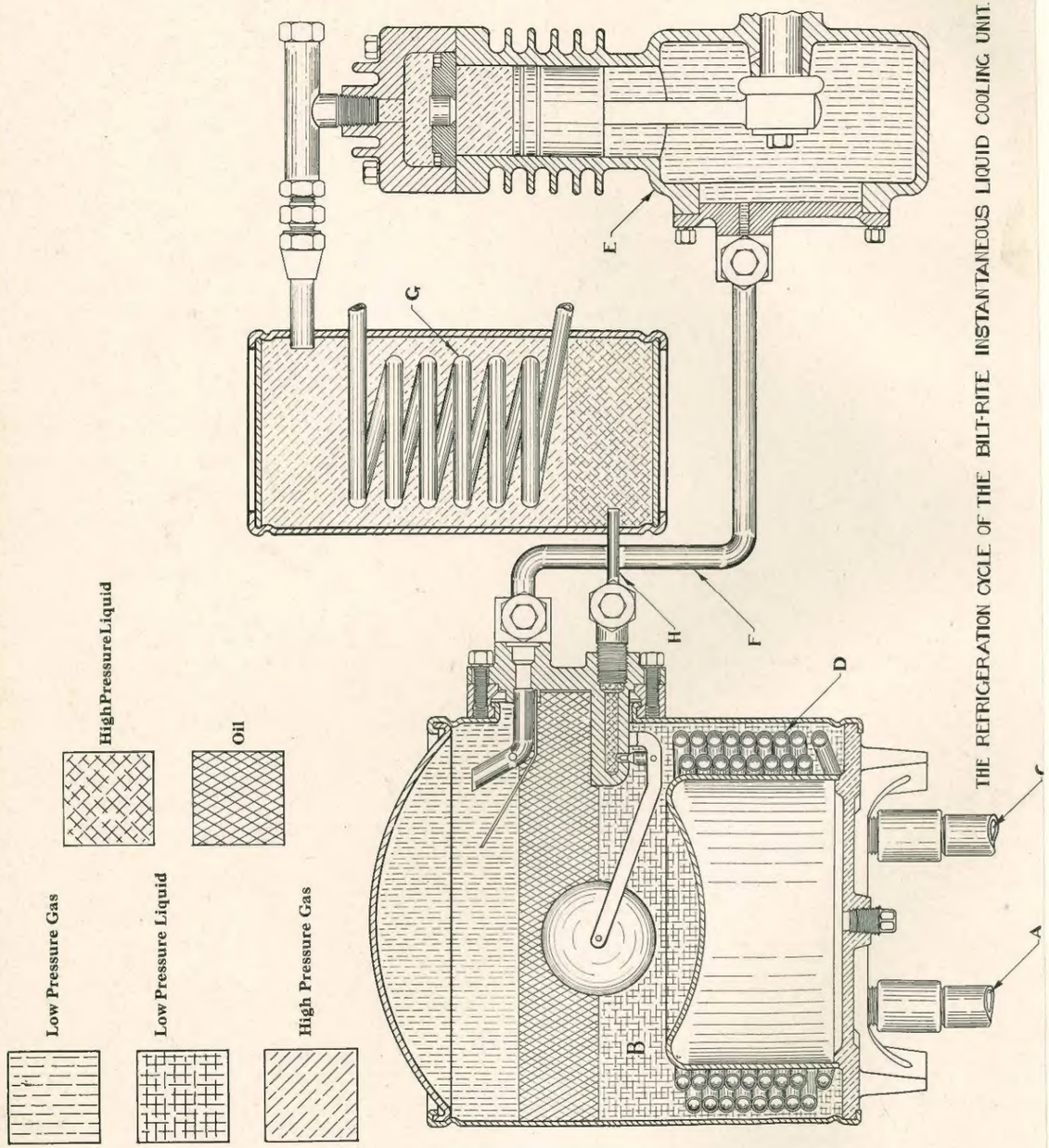


Fig. 2

THE REFRIGERATION CYCLE OF THE BILT-RITE INSTANTANEOUS LIQUID COOLING UNIT.

Consider Fig. 2. The water to be cooled enters the cooling unit at (A). In passing thru the cooling coil (D), this water gives up heat to the liquid SO_2 (B), causing the latter to boil. This evaporation directly on the water coil cools the water to any predetermined temperature by the time it reaches the water outlet at (C).

The vapor from this boiling SO_2 is drawn back thru the suction line (F) to the refrigerating compressor (E), carrying with it the heat it has absorbed in cooling the water. This vapor is compressed to a high pressure gas and then condensed to a high pressure liquid by means of condenser coils (G). The heat absorbed in cooling the water is thereby liberated to the water passing thru these condenser coils in the case of a water cooled condenser and to the air in the case of an air cooled condenser. The liquid SO_2 then returns thru the liquid line (H) to the Bilt-Rite Cooling Unit, thereby completing the refrigeration cycle.

Why the Bilt-Rite Water Cooling Unit Increases the Available Capacity of a Compressor

By using the Bilt-Rite Instantaneous Water Cooling Unit in the ordinary flooded type refrigeration system, it is possible to operate the compressor at a suction temperature which is within two or three degrees of the outlet temperature of the water. This operating temperature is considerably higher than that obtainable by the use of the ordinary methods and results in a maximum compressor efficiency for water cooling applications.

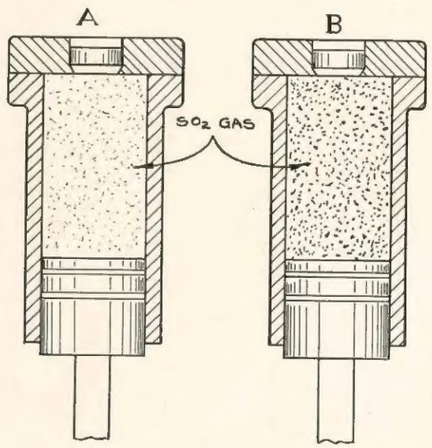


Fig. 3

Temperature 20° Fahr. Specific Weight .22 Lbs. per Cu. Ft.

Temperature 48° Fahr. Specific Weight .40 Lbs. per Cu. Ft.

The explanation of this increased capacity lies in a fundamental principle of refrigeration. *The capacity of a given compressor increases as the suction temperature at which it operates is increased.*

Consider Fig. 3. (A) and (B) represent the same cylinder of the ordinary piston type compressor. In each case the piston is just ready to start the compression stroke, the cylinder being filled with the low pressure vapor from the low side of the refrigeration system. (A) represents the prevailing condition when the compressor is operated at a suction temperature of 20° F; (B), the condition at 48° F. These conditions correspond respectively to the operating suction temperatures of the ordinary indirect heat transfer methods and the Bilt-Rite Direct Heat Transfer Method.

From the diagram it is seen that the piston will displace the same *volume* of gas per stroke in both (A) and (B). However, the gas in (A) *weighs .22* pounds per cubic foot; that in (B), *.40* pounds per cubic foot. Hence, the *weight* of gas moved per stroke of the piston in (B) is nearly twice that moved in (A). Since the *available refrigeration* per stroke *depends* upon the *weight* of *gas moved*, it follows that the

capacity of the compressor is practically doubled when used with the Bilt-Rite Instantaneous Water Cooling Unit.

Fig. 4 illustrates the per cent of available compressor capacity that it is possible to obtain with ordinary methods and with the Bilt-Rite method. The average per cent of available capacity obtained by ordinary methods is 49; by the Bilt-Rite method, 90. It is noticed that the ratio of 90 to 49 is slightly less than the theoretical value of .40 to .22 mentioned above. This is due to the change in volumetric efficiency of the compressor while operating at the higher pressures.

Accurate Control of Outlet Water Temperature

Perhaps the greatest problem that has confronted the manufacturers of water cooling equipment has been that of providing a means by which the temperature of the exit water could be accurately controlled. Indirect heat transfer methods prevent such control. If the water stands in the coil for any length of time, it drops in temperature to a point where it is *too cold* and injurious. And vice versa, if the water is drawn thru the coil

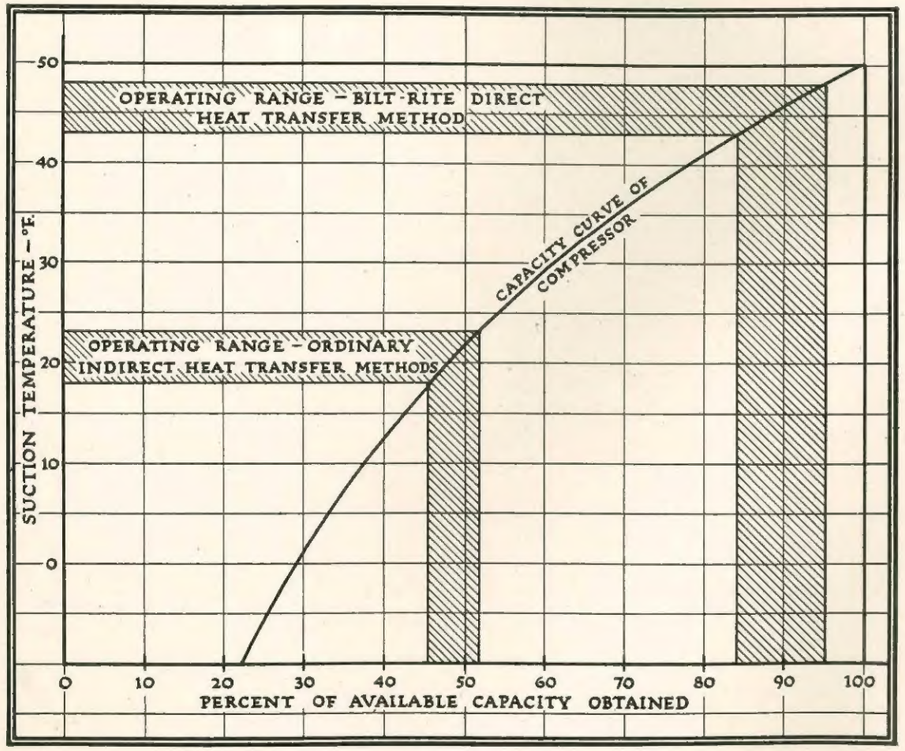


Fig. 4

continuously, its temperature rises to a point where it is entirely *too warm* to be palatable.

For the first time in water cooling practice, the Bilt-Rite Unit provides a means by which the outlet water temperature can be automatically controlled within a maximum differential of 3° F. The *instantaneous* cooling action of the system makes such control possible. The water *does not have to stand* in the coil to be cooled. The *rapid heat transfer*, made possible by the evaporation of the SO_2 *directly on* the water coil, enables the water to be cooled while *passing thru* the coil.

Due to the known relation between the suction pressure and the temperature of the outlet water (Fig. 5), it is possible to use a pressure type control with Bilt-Rite Units. From Fig. 5 it is seen that any desired exit water temperature may be procured by adjusting the control to operate at the corresponding suction pressure.

Whether one person or ten desire a drink of water, they are all assured of receiving it at the proper temperature. A temporary overload will not show an appreciable effect upon the temperature of the outlet water. The increased amount of water *passing thru* the cooling unit causes a corresponding increase in the *suction temperature*, resulting in increased compressor capacity which counteracts the tendency of the water to rise in temperature. Experimental tests have shown that with a temporary overload, the rise in outlet water temperature is negligible.

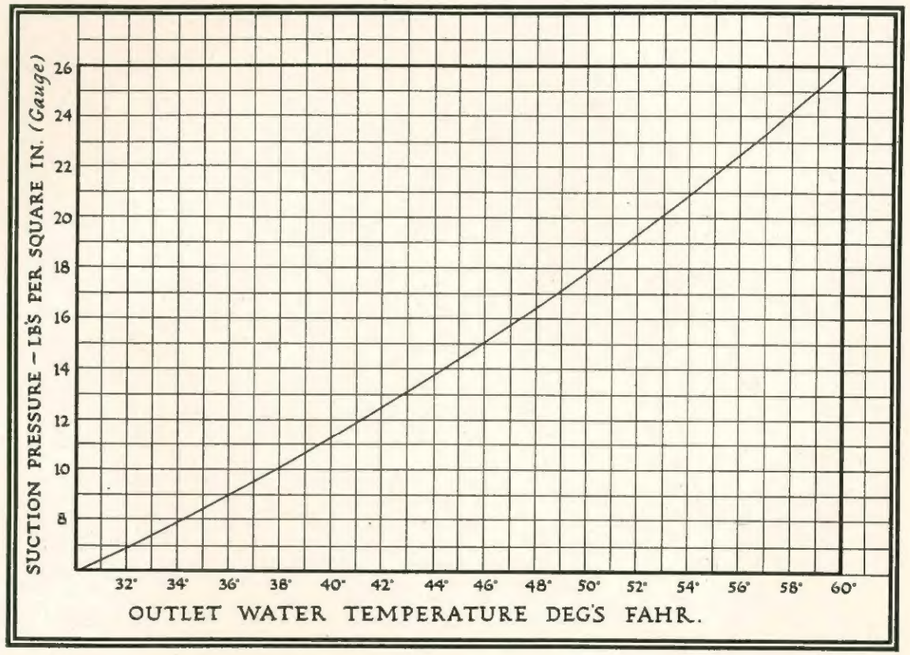


Fig. 5

Seven Major Reasons Why Bilt-Rite Water Coolers Excel

1 BILT-RITE Cools Water Instantaneously.

2 BILT-RITE Accurately Controls the Temperature of the Outlet Water at Any Desired Point.

3 BILT-RITE Automatically Adapts Itself to Handle Temporary Overloads with Negligible Temperature Rise.

4 BILT-RITE Increases Available Compressor Capacity to a Maximum, Reducing Necessary Equipment to a Minimum.

5 BILT-RITE is Small and Compact, Requiring Minimum Space.

6 BILT-RITE Reduces Unavoidable Heat Losses to a Minimum.

7 BILT-RITE Reduces Initial and Operating Costs.

Description and General Specifications *of* Bilt-Rite Water Cooler Cabinets

BILT-RITE WATER COOLER CABINETS, illustrated herein, contain as standard equipment the correct size of Bilt-Rite Water Cooling Unit for attaching the model of Frigidaire Compressor to deliver the predetermined quantity of cooled water required.

The models illustrated have been designed and carefully engineered in anticipation of a demand for metal cabinets of new and attractive construction and finish, compact in size, and easily accessible for servicing. Specific details are shown with each model.

Specifications applicable in general to all models are as follows:

SHEET METAL — Copper-bearing Furniture Steel.

INSULATION — 2″ Armstrong Cork Board, applied with Hydrolene.

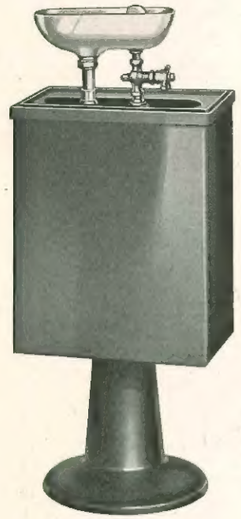
FOUNTAIN — Angle Stream Bubbler (C-298).

Self Closing Valve — Nickel Plated. Adjustable for regulating volume of stream.

Receptor — Vitreous Enameled.

Glass Fillers — Single or Double — Nickel Plated.

Supply and Waste Pipes and Flanges — Nickel Plated.

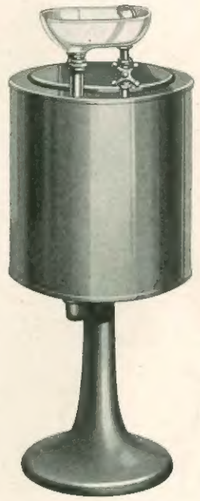


Cumberland Model

Remote Installation of Frigidaire Compressor

Dimensions: 40″ high, 16½″ wide, 14½″ deep
Finished in Duco, Sage Green
One Bubbler, Porcelain Enameled, Angle Stream

Model	Frigidaire Compressor Required	Bilt-Rite Cooling Unit Installed in Cabinet
No. 31	Model "G"	C–129–F
No. 32	Model "Y"	E–129–F



Olympic Model

Remote Installation of Frigidaire Compressor

Dimensions: 38″ high, 15½″ diameter
Finished in Duco, Sage Green
One Bubbler, Porcelain Enameled, Angle Stream

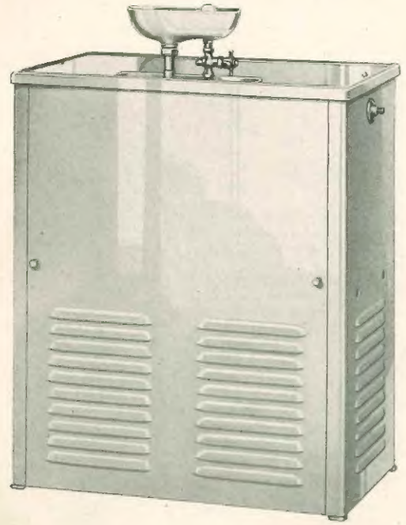
Model	Frigidaire Compressor Required	Bilt-Rite Cooling Unit Installed in Cabinet
No. 11	Model "G"	C–129–F
No. 12	Model "Y"	E–129–F

Ozark Model

Remote Installation of Frigidaire Compressor

Dimensions: 24½″ high, 16½″ wide, 14½″ deep
Finished in Duco, Sage Green
One Bubbler, Porcelain Enameled, Angle Stream
Hangers, for attaching to wall

Model	Frigidaire Compressor Required	Bilt-Rite Cooling Unit Installed in Cabinet
No. 26	Model "G"	C–129–F
No. 27	Model "Y"	E–129–F

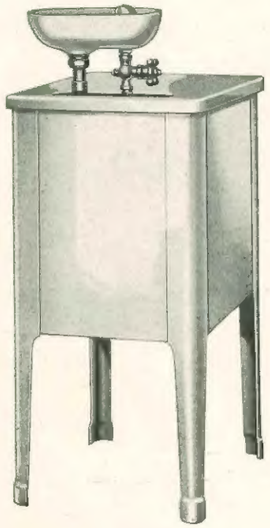


Blue Ridge Model

Self-Contained Installation of Frigidaire Compressor

Finished in Duco, White and Sage Green
One or Two Bubblers

Model	Bubbler	Color Duco	Dimensions			Frigidaire Compressor Required	Bilt-Rite Cooling Unit Installed in Cabinet
			High	Wide	Deep		
No. 80	One	White	44″	33″	20″	Model "G"	C–129–F
No. 81	Two	White	44″	33″	20″	Model "G"	C–129–F
No. 82	One	Green	44″	33″	20″	Model "G"	C–129–F
No. 83	Two	Green	44″	33″	20″	Model "G"	C–129–F
No. 84	One	White	44″	38″	20″	Model "Y"	E–129–F
No. 85	Two	White	44″	38″	20″	Model "Y"	E–129–F
No. 86	One	Green	44″	38″	20″	Model "Y"	E–129–F
No. 87	Two	Green	44″	38″	20″	Model "Y"	E–129–F
No. 88	One	White	44″	38″	20″	Model "N"	J–149–F
No. 89	Two	White	44″	38″	20″	Model "N"	J–149–F
No. 90	One	Green	44″	38″	20″	Model "N"	J–149–F
No. 91	Two	Green	44″	38″	20″	Model "N"	J–149–F



Rainier Model

Remote Installation of Frigidaire Compressor

Dimensions: 39½" high, 16½" wide, 16½" deep
Finished in White Porcelain Enamel
One Bubbler, Porcelain Enameled, Angle Stream

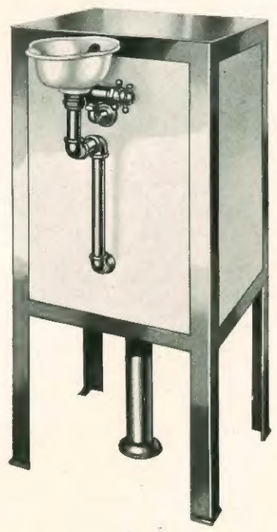
Model	Frigidaire Compressor Required	Bilt-Rite Cooling Unit Installed in Cabinet
No. 41	Model "G"	C–129–F
No. 42	Model "Y"	E–129–F

Glacier Model

Remote Installation of Frigidaire Compressor

Dimensions: 40" high, 17" wide, 14" deep
Finished in White Porcelain, Enameled Sides
Polished Monel Metal Top
Nickel Plated Legs, and Tubular Shield for Water and Refrigerant Tubing
One Bubbler, Porcelain Enameled, Angle Stream

Model	Frigidaire Compressor Required	Bilt-Rite Cooling Unit Installed in Cabinet
No. 60	Model "G"	C–129–F
No. 61	Model "Y"	E–129–F
No. 62	Model "N"	J–149–F



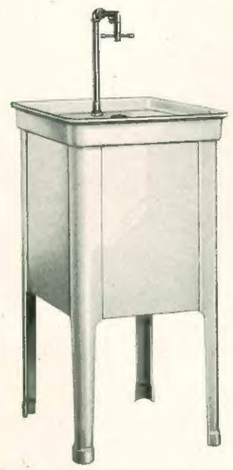
Berkshire Model

For Cafeterias

Self-Contained Installation of Frigidaire Compressor

Dimensions: 51" high, 39" wide, 26" deep
Finished in Duco, White, with Black Porcelain Enameled Lower Shelves, Top Shelf and Legs
Center Shelves of White Vitrolite; one on each side of Cooler—Nickel Plated Top Rail and Corner Posts
Two Glass Fillers

Model	Frigidaire Compressor Required	Bilt-Rite Cooling Unit Installed in Cabinet
No. 70	Model "Y"	E–129–F
No. 71	Model "N"	J–149–F



Catskill Model

For Cafeterias

Remote Installation of Frigidaire Compressor

Dimensions: 35" high, 16½" wide, 16½" deep—Finished in White Porcelain Enamel — Single or Double Glass Filler

Model	Glass Filler	Frigidaire Compressor Required	Bilt-Rite Cooling Unit Installed in Cabinet
No. 52	Single	Model "G"	C–129–F
No. 53	Single	Model "Y"	E–129–F
No. 55	Double	Model "G"	C–129–F
No. 56	Double	Model "Y"	E–129–F

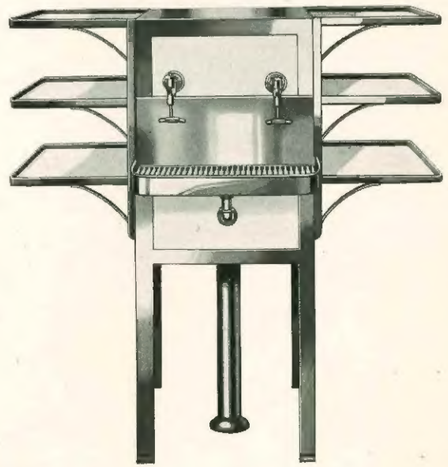
Sierra Model

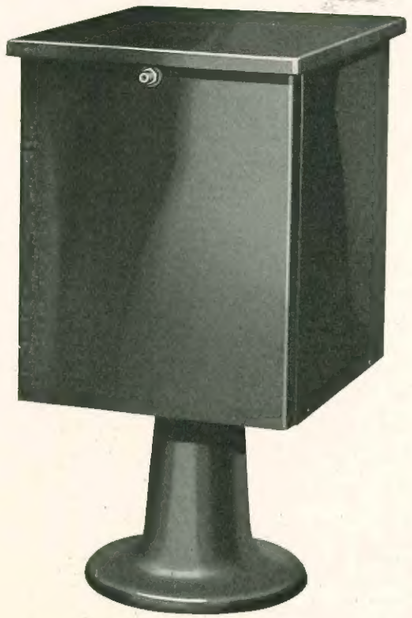
For Cafeterias

Remote Installation of Frigidaire Compressor

Dimensions: 46" high, 17" wide, 14" deep—Shelves extend 12" each side—Finished in White Porcelain, Enameled Sides — White Vitrolite Top and Side Shelves — Nickel Plated Shelf Brackets, Legs, and Tubular Shield for Water and Refrigerant Tubing
Nickel-Silver Non-splash Receptor
Two Glass Fillers

Model	Frigidaire Compressor Required	Bilt-Rite Cooling Unit Installed in Cabinet
No. 65	Model "G"	C–129–F
No. 66	Model "Y"	E–129–F
No. 67	Model "N"	J–149–F





Cascade Model

For Circulating Water or Multiple Fountain Application

Remote Installation of Frigidaire Compressor

Dimensions: 33″ high, 16½″ wide, 16½″ deep
Finished in Duco, Sage Green

Model	Frigidaire Compressor Required	Bilt-Rite Cooling Unit Installed in Cabinet
No. 110	Model "Y"	E–129–F
No. 111	Model "N"	J–149–F
No. 112	Model "C"	N–169–F

Blue Ridge Model

For Circulating Water or Multiple Fountain Application

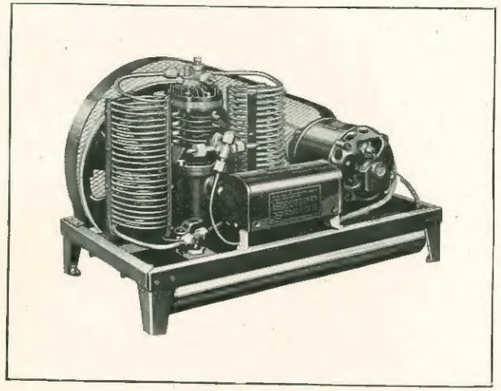
Self-Contained Installation of Frigidaire Compressor

Finished in Duco, Sage Green

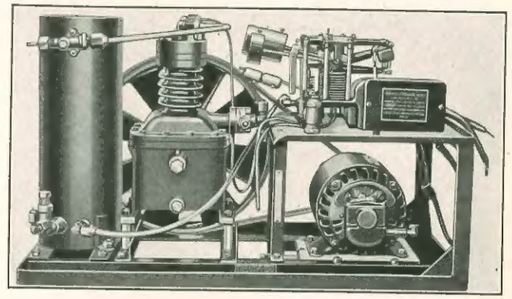
Model	Dimensions			Frigidaire Compressor Required	Bilt-Rite Cooling Unit Installed in Cabinet
	High	Wide	Deep		
No. 100	39″	33″	20″	Model "G"	C–129–F
No. 101	39″	38″	20″	Model "Y"	E–129–F
No. 102	39″	38″	20″	Model "N"	J–149–F

Frigidaire Compressors

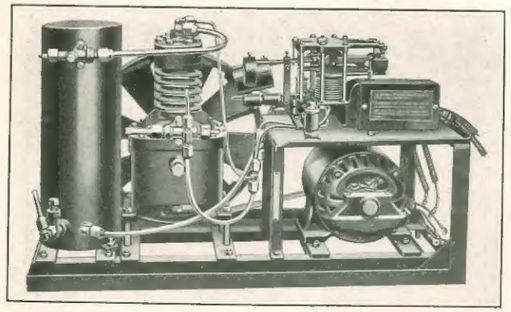
In ordering Compressors, be sure to specify they are for use with Bilt-Rite Instantaneous Electric Water Cooling Units



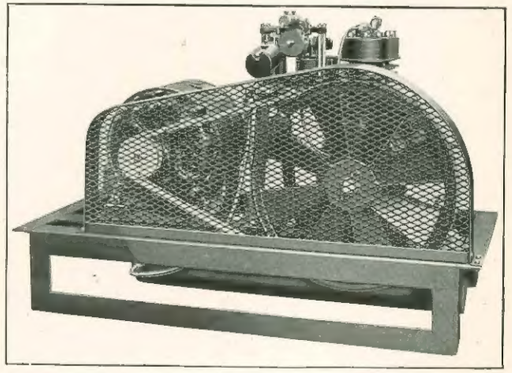
Model "G"



Model "Y"



Model "N"



Model "C"

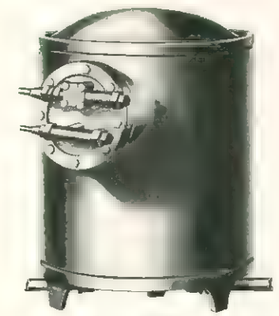
CAPACITY TABLE

Frigidaire Compressors with Bilt-Rite Water Coolers

GALLONS PER HOUR

Inlet Water Temp. Degrees Fahr.	OUTLET WATER TEMPERATURE — DEG. FAHR.									
	40			45			50			
	Y	N	C	Y	N	C	G	Y	N	C
60	29.0	36.0	70.0	40.0	53.0	88.0	23.0	60.0	88.0	130.0
65	23.5	28.0	53.0	33.0	41.4	66.0	18.7	45.0	64.0	104.0
70	19.0	22.5	42.0	26.5	30.6	50.0	14.9	35.0	45.0	85.0
75	16.0	18.9	33.0	21.5	24.3	41.0	12.3	27.0	34.0	70.0
80	13.0	15.8	29.0	16.8	20.5	35.0	10.4	21.0	27.0	58.0
85	11.0	14.0	25.0	14.5	18.3	31.5	8.9	17.0	23.4	48.0
90	9.5	12.2	22.5	12.0	16.2	28.0	7.7	15.0	21.6	40.0
95	8.0	10.4	20.0	10.5	14.2	24.5	6.8	13.0	19.8	33.0
100	6.7	8.6	18.0	9.0	12.3	21.0	6.1	11.2	18.0	27.0
105	5.5	6.8	16.0	7.8	10.8	19.0	5.5	10.0	16.5	22.0
110	4.5	5.1	15.0	6.8	9.6	17.0	5.0	9.3	15.3	19.0

Bilt-Rite Instantaneous Electric Water Cooling Unit



Patent Pending

For Gallons Cooled refer to Table of Capacities on Page 20.

Application	Bilt-Rite Unit Model	Height Over All	Diameter		Frigidaire Compressor Required
			Shell	Including Valves	
For Cooling Water, or other single liquid *Single Inlet and Outlet*	C–129–F	12″	9″	12¾″	Model "G"
	E–129–F	12″	9″	12¾″	Model "Y"
	J–149–F	14″	9″	12¾″	Model "N"
	N–169–F	16″	9″	12¾″	Model "C"
For Cooling Two Different Beverages, or other liquids *to same temperature* *Two Separate Inlets and Outlets*	G–129–F	12″	9″	12¾″	Model "G"
	P–169–F	16″	9″	12¾″	Model "Y" or Model "N"
For Cooling Three Different Beverages, or other liquids *to same temperature* *Three Separate Inlets and Outlets*	~~L–149–F~~	~~14″~~	~~9″~~	~~12¾″~~	~~Model "G"~~
	R–169–F	16″	9″	12¾″	Model "Y" or Model "N"

Orders for Bilt-Rite Cooling Units for installation in Cabinets not of Russ manufacture, and for cooling water, beverages or other liquids, must be accompanied by complete information as to application.

The Russ Research and Engineering Department is prepared with equipment and personnel to render service on all Liquid Cooling problems.

C-299
Vertical Bubbler and Vitreous Enameled Receptor
N. P. self-closing valve with regulator.

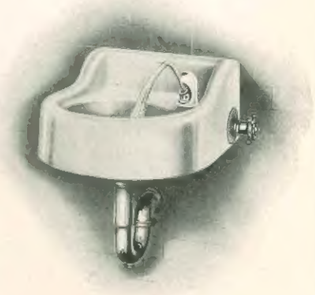
C-244
Vitreous Enameled Wall Fountain
With angle jet bubbler, trap and supply to wall. Loose key stop valve in supply. N. P. self-closing valve with regulator.

C-298
Angle Jet Bubbler and Vitreous Enameled Receptor
N. P. self-closing valve with regulator.

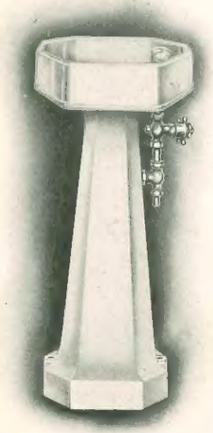
No. 1 No. 22 No. 2
Glass Fillers

C-242
Vitreous China Wall Fountain
With vertical China bubbler; concealed trap, supply and waste pipe to wall. N. P. self-closing valve with regulator.

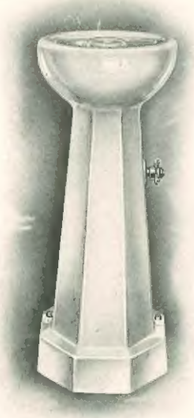
C-252
Wall Fountain
With vitreous enameled receptor and integral bracket. Equipped with angle jet bubbler. N. P. strainer with tail piece and coupling nut, and N. P. self-closing valve with regulator.



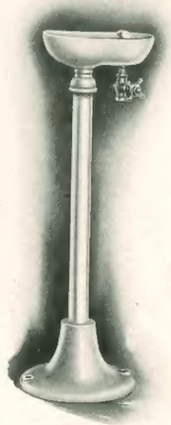
C-243
Porcelain Enameled Fountain
With angle jet bubbler; trap and supply to wall. Loose key stop valve in supply. N. P. self-closing valve with regulator.



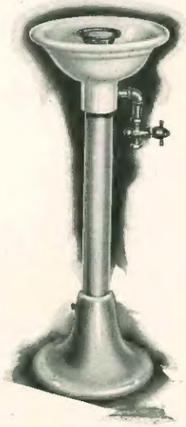
C-209
Vitreous Enameled Pedestal Drinking Fountain
With angle jet stream, supply and waste to floor. N. P. self-closing valve with regulator.
Height: 30 and 36 inches.



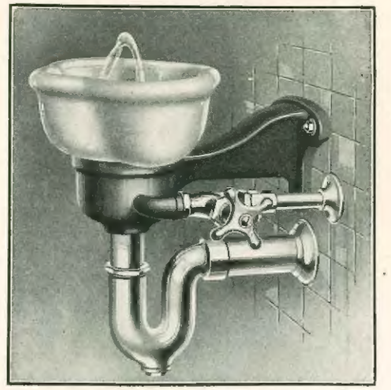
C-212
Vitreous China Drinking Fountain
With vertical China bubbler, concealed supply and waste pipe to floor or wall. N. P. stop in supply and N. P. self-closing valve with regulator.
Height of Pedestal: 30 inches.



C-226
Pedestal Drinking Fountain
With angle stream bubbler, N. P. self-closing valve with regulator, and vitreous enameled receptor; galvanized pedestal and waste with adjustable base; finished in Aluminum.
Height: 30, 36 and 42 inches.

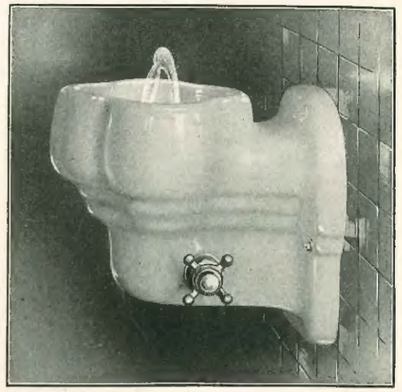


C-228
Pedestal Drinking Fountain
With vertical stream bubbler, N. P. self-closing valve with regulator, and vitreous enameled bowl; galvanized pedestal and waste with adjustable base; finished in Aluminum.
Height: 30, 36 and 42 inches.



No. 600 Automatic Control Wall Fountain
(Patented)

Vitreous china receptor; with N. P. brass strainer; cast iron baked gray enameled bracket to wall; N. P. self-closing stop; loose key volume regulator; 1¼" N. P. brass trap and N. P. brass supply and waste pipes. Furnished with *2-stream mound building projector and automatic stream control.*



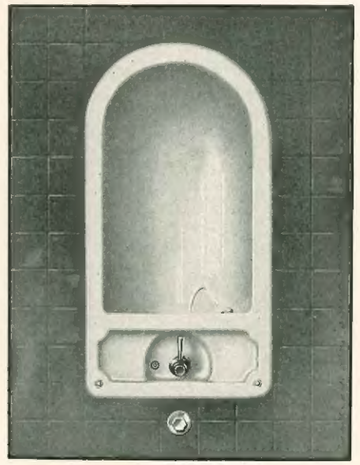
No. 605 Automatic Control Vitreous China Wall Fountain
(Patented)

Vitreous china wall drinking fountain with integral trap housing; concealed wall hanger; N. P. brass wall bolts; N. P. brass strainer; self-closing stop with either lever or cross handle; loose key stop and union connection for ⅜" I. P. supply; rough brass trap for 1¼" I. P. outlet; furnished with *2-stream mound building projector and automatic stream control.*

No. 623 Automatic Control Vitreous China Wall Fountain

Vitreous china wall drinking fountain with integral trap housing; concealed wall hanger; N. P. brass strainer; N. P. self-closing cross handle stop; loose key regulator and union connection for ⅜" I. P. supply; 1½" New York Regulation trap with clean-out plug; equipped with N. P. oscillating lever handle glass filling faucet through back.

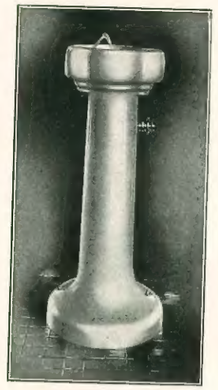
Furnished with *2-stream mound building projector and automatic stream control.*



No. 625 Automatic Control Vitreous China Recessed Wall Fountain

Vitreous china recessed wall drinking fountain. N. P. brass strainer; N. P. self-closing lever handle S. C. stop; loose key regulator and union connection for ⅜" I. P. supply; 1½" New York Regulation trap with clean-out and metal wall flange.

Furnished with *2-stream mound building projector and automatic stream control.*



No. 616 Automatic Control
Vitreous China Pedestal Fountain
(Patented)

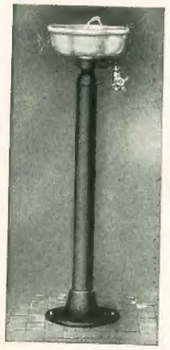
Vitreous china pedestal fountain with 10″ x 13″ receptor; N. P. brass strainer; cast brass supply and waste connection; N. P. self-closing stop with loose key volume regulator at side of pedestal; floor screws with N. P. cap nuts; furnished with *2-stream mound building projector and automatic stream control.*

Fig. 1 Fig. 2

No. 520-600
Automatic Control Pedestal Fountain
(Patented)

Pedestal finished in gray enamel; vitreous china receptor; N. P. brass strainer; 4″ O. D. steel tubing standard, and heavy cast iron tripod base and cover. Enclosed galvanized supply and waste pipes; N. P. self-closing stop. Loose key volume regulator concealed in base. Furnished with *2-stream mound building projector and automatic stream control.*

By raising base cover (Fig. 1) connections can be made without disturbing floor or concrete. After connections are made pedestal is bolted to foundation, stream adjusted, and base cover lowered to proper position, concealing regulator (Fig. 2).



617 618

No. 617 or No. 618
Automatic Control Pedestal Fountain
(Patented)

No. **617**. Pedestal finished in gray enamel; vitreous china receptor; N. P. brass strainer; 2½″ O. D. steel tubing standard and cast iron closed base; N. P. self-closing stop; loose key volume regulator; furnished with *2-stream mound building projector and automatic stream control.*

No. **618**. Same as above but with cast iron open base for connections above floor line.

No. 586 Automatic Control
Fountain Head
(Patented)

Vitreous china 7½″ x 10″ receptor; N. P. brass strainer; brass supply and waste fittings; self-closing stop with regulator and union connections; furnished with *2-stream mound building projector and automatic stream control.*

Special Applications
of
The Bilt-Rite Liquid Cooling Unit

INNUMERABLE industrial processes require water cooled to a specific temperature; potable liquids are most palatable when served at the proper temperature; Bottlers, Bakers, and Photographers all have various liquid cooling requirements.

The Bilt-Rite Liquid Cooling Unit *now opens* this vast commercial field of liquid cooling to the smaller types of refrigerating machines. A few of the many special applications for which this unit is suited are:

Beverage Cooling:

Bilt-Rite now offers Beverage Coolers which will cool either one, two or three separate beverages to the same temperature. With such equipment, beverage manufacturers may be assured that their drinks are dispensed at the same *constantly cold* temperature.

Photographers:

One of the most serious problems confronting photographers, namely, maintaining developing solutions and rinsing baths at the proper temperature, finds a logical as well as an economical solution in the Bilt-Rite Cooler. A precooler, utilizing the cooled waste water to lower the temperature of the incoming water should be used in such an application.

Bottlers:

Bottlers of various drinks, perfumes, etc., realize the advantage of bottling their respective liquids at the proper temperature. In the case of drinks, more carbonic acid gas is absorbed by cold water — for perfumes and similar liquids, evaporation losses are minimized and clear solutions assured if bottled at low temperatures. The correct bottling temperature varies with different liquids, but the accurate control that is possible by use of the Bilt-Rite Cooling Unit may be successfully adapted to each particular case.

Bakers:

Bakers everywhere are demanding an improved method of providing cooled mixing water. The problem in this application is particularly difficult, due to the fact that a large quantity of water cooled to the proper temperature is required to be delivered in a few minutes' time. The Bilt-Rite Storage Tank System offers an ideal solution to this problem. This system automatically builds up during the idle periods a supply of water cooled to the proper temperature which is available for use when the "batch" is ready to be mixed.

All special applications should be referred with complete information to The Russ Manufacturing Company for recommendations and prices.

Types of Water Cooling Systems

There are four general types of water cooling systems; Individual, Circulating, (Fig. 6); Non-circulating, (Fig. 7); and Bilt-Rite Multiple Unit, (Fig. 8).

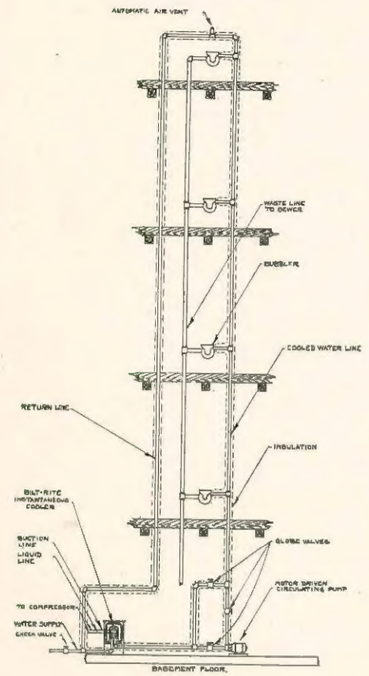


Fig. 6
Circulating System

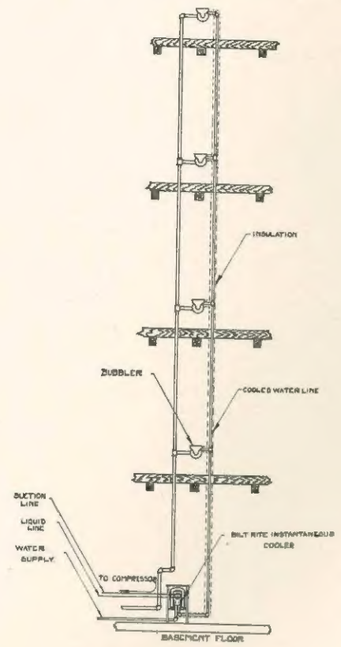


Fig. 7
Non-circulating

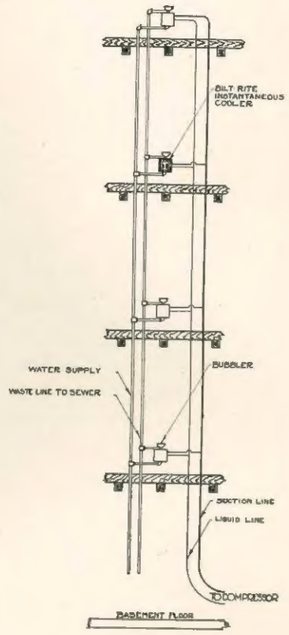


Fig. 8
Bilt-Rite Multiple Unit

Individual System

Water Cooling Systems in which the bubbler or bubblers are located at the cooler are known as *Individual Water Cooling Systems.* The Compressor may be either self-contained or remote.

Circulating System

A Circulating System should *never be installed for use with smaller than ½" standard pipe.* The circulating pump in such a system merely overcomes the friction in the lines.

To determine the proper size pump, add the number of gallons per hour actually used and wasted, from proper Table (I) to (VI), to the gallons per hour circulated, from Table (VII). The total gives the number of gallons per hour which the pump must deliver against the friction in the lines.

If it is impossible for the local pump representative to supply pumps of required sizes, consult our engineering department before installing an over-sized pump.

In order to eliminate any possibility of an air pocket in the top of a circulating system for which a surge tank has not been provided, an automatic air snifter should be installed.

Details of piping layouts for circulating systems such as above are usually taken care of by the plumbing contractor.

All Cold Water Lines **Must be Insulated**

Non-Circulating System

Non-Circulating Systems can be used satisfactorily on vertical runs NOT EXCEEDING FOUR FLOORS.

To determine the proper location of the cooler for such a system the following rules apply:

(1) Other things being equal, the cooler should be located so that the length of line from the cooler to the bubblers is minimized.

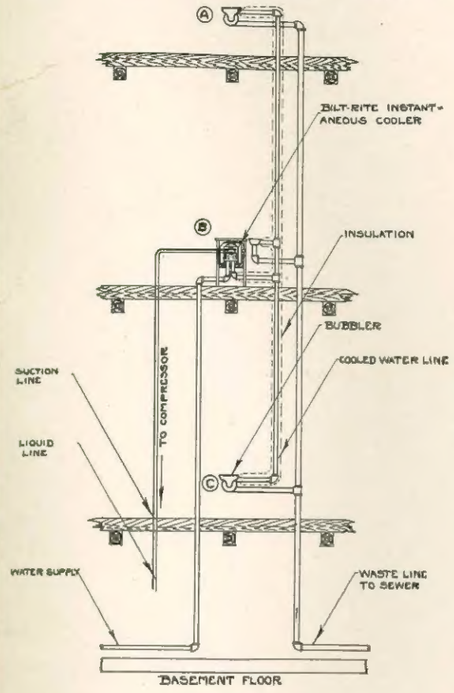


Fig. 9

(2) In case of quite uneven usage on bubblers, the cooler should be located so that the least used bubblers are between it and the most used bubbler.

Examples:

(1) — Consider Fig. 9. — 2 gallons of water per hour are required at A, B, and C. Since the usage on the three bubblers is even, rule (1) is followed and the cooler placed at B.

(2)—Consider Fig. 10. — 2 gallons of water per hour are required at B and C, while 5 gallons of water per hour are required at A. Considerably more water being used at A than at B or C, rule (2) is followed and the cooler placed at C.

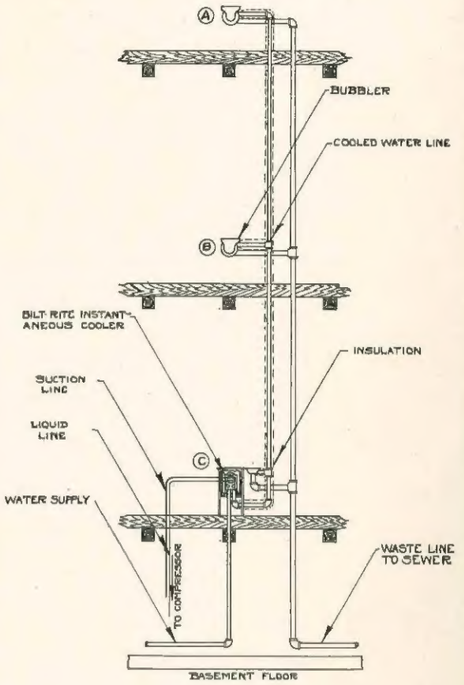


Fig. 10

Bilt-Rite Multiple Unit System

Bilt-Rite now offers to the field of water cooling another new and startling innovation — *the Bilt-Rite Multiple Unit System.* A number of Wall Fountains or Individual Coolers, each housing the Bilt-Rite Cooling Unit, may now be connected to a single refrigerating compressor.

In such a system, the liquid and suction lines are run to the cooling units in exactly the same manner as in the Multiple Unit Refrigerator System for apartment house applications. Limitations on the vertical rise of liquid line and the total length of suction line are likewise the same.

The elimination of *insulated cold water lines, circulating pump,* and *line losses* are the outstanding advantages of such a system as compared with the circulating type.

Accurate temperature control of the outlet water is now assured with the Bilt-Rite method due to the known relation between the sulphur dioxide suction pressure and the outlet water temperature. Inasmuch as there are no line losses between the cooling unit and bubbler, the suction pressure should be set corresponding to the desired outlet water temperature at the bubbler. (See Fig. 5, Page 11.)

The method of calculating the necessary equipment is exactly the same as for circulating systems, except that there are no line losses to be considered. The total capacity of such a system is the same as the capacity of the compressor which is used. (See Capacity Table, Page 20).

All Cold Water Lines **Must be Insulated**

Water Cooling Tables

The following tables compiled by the engineering division of the Bilt-Rite Liquid Cooling Department are arranged with the idea of assisting the salesman on the job in selling correct water cooling equipment.

TABLE I
GENERAL MERCHANDISING SERVICE
Water Used and Wasted

Total Customers Per Day	Gallons Per Hour	Employees	Gallons Per Hour
250	0.5	10	1.25
500	1.0	20	2.50
750	1.5	30	3.75
1000	2.0	40	5.00
1500	3.0	50	6.25
2000	4.0	60	7.50
2500	5.0	70	8.75
3000	6.0	80	10.00
3500	7.0	90	11.25
4000	8.0	100	12.50
4500	9.0	125	15.62
5000	10.0	150	18.75
6000	12.0	175	21.87
7000	14.0	200	25.00
8000	16.0	250	31.25
9000	18.0	300	37.50
10000	20.0	350	43.75
11000	22.0	400	50.00
12000	24.0	450	56.25
13000	26.0	500	62.50
14000	28.0	600	75.00
15000	30.0	700	87.50
16000	32.0	800	100.00
17000	34.0	900	112.50
18000	36.0	1000	125.00
19000	38.0		
20000	40.0		
25000	50.0		

HOTEL SERVICE
Water Used and Wasted, 1 gallon per room per day.

TABLE II
FACTORY SERVICE
Water Used and Wasted

Number of Employees	Gallons Per Hour	
	Heavy Usage*	Light Usage
50	12.5	9.4
100	25.0	18.8
150	37.5	28.0
200	50.0	37.5
250	62.5	46.9
300	75.0	56.2
350	87.5	65.6
400	100.0	75.0
450	112.5	84.4
500	125.0	93.8
550	137.5	103.0
600	150.0	112.5
650	162.5	121.9
700	175.0	131.2
750	187.5	140.6
800	200.0	150.0
850	212.5	159.4
900	225.0	168.8
950	237.5	178.0
1000	250.0	187.5
1100	275.0	206.2
1200	300.0	225.0
1300	325.0	243.8
1400	350.0	262.5
1500	375.0	281.2
1600	400.0	300.0
1700	425.0	318.8
1800	450.0	337.5
1900	475.0	356.2
2000	500.0	375.0
3000	750.0	562.5

* *Heavy Usage* — Refers to conditions foun Steel Mills, Forge Shops, Foundries, L dries, or any other similar application w the per capita consumption is high.

* *Light Usage* — Refers to the conditions fo in Electrical Appliance Factories, Auto A sory Plants, Woodworking and Machine Sh or any other similar application where th capita consumption is not excessive.

RETURN TO
DESIGN DIV.

All Cold Water Lines  **Must be Insulated**